SOFTWARE ENGINEERING M.S. PROGRAM

FULL-TIME OPTION (369)

HANDBOOK
March 2002

NAVAL POSTGRADUATE SCHOOL

Monterey, California

PROGRAM OBJECTIVE

The Software Engineering program at the U.S. Naval Postgraduate School provides military and government graduate students with an opportunity to learn all relevant aspects of software development and the skills needed to efficiently and reliably plan and create large-scale software intensive systems using the best available science and technology. These skills are essential for officers and civilians responsible for acquisition, development or maintenance of military software.

The program includes in-residence and distance learning M.S. and Ph.D. degree programs, certificate programs, short courses, and laboratory support. The Ph.D. program is the first-ever doctoral program in Software Engineering. Both the M.S. and Ph.D. degree programs may be completed either on campus by students carrying a full-time course load, or part-time through the distance learning option.

REQUIREMENTS FOR ENTRY

An accredited Bachelor's degree in computer science, computer engineering, or related field, with above-average grades in mathematics, resulting in an APC of at least 325, and at least two years of software development or maintenance experience is required for entry.

Application information for the M.S. degree in Software Engineering can be found at:
http://seac.nps.navy.mil/Masters.htm

ADMISSION PROCEDURES

The point of contact to request Naval Postgraduate School catalogs and admission to all degree programs is:

Director of Admissions
Code 01B3, Naval Postgraduate School,
589 Dyer Rd., RM 103C
Monterey, CA 93943-5100
Telephone   (831) 656-3093, DSN 878-3093
FAX   (831) 656-2891

DEGREE REQUIREMENTS

Students enrolled in the Software Engineering curriculum must successfully complete the 12 or 18 quarter-length Software Engineering courses. Completion of a master's thesis is required.

THESIS GUIDELINES

The Master's thesis is the capstone achievement of the student's academic endeavor at NPS. A challenging research thesis, requiring students to apply their focused graduate education, is one of the most effective methods for both solving Fleet/Joint Force problems and instilling the life-long capability for applying basic principles to the creative solution of complex problems.

A Software Engineering thesis should either demonstrate the use of Software Engineering principles and techniques in solving existing software problems, or develop new theory, models, methods, or tools for building/maintaining software systems. A thesis must have some kind of scientific contribution, not just manufacturing of a lot of source code. This is why students must specify their expected scientific contributions in their thesis proposal.

It is very important for a student to pick the right project and define the scope of the thesis work. The student's thesis advisor will help him/her define the scope of the thesis work and identify its scientific contributions.

Additionally, the thesis advisor will:

 - help a student to lay out a schedule of milestones.
 - suggest initial references to read and people to contact.
 - meet with the student regularly to monitor progress and provide consultation and direction.
 - review and critique the thesis outline.
 - review and critique the work, offer suggestions for necessary revisions, and check for accuracy and completeness.

The thesis advisor can help with topics in one of the following two ways:

(1) The advisor has a list of thesis topics in mind. He/she already knows how much work each topic has involved and what the scientific contributions are. A student simply has to follow the direction of his/her advisor to complete the thesis work.
(2) A student has a project from work, and he/she finds it beneficial to use results of the project to write the thesis.

If a student chooses option 2, then the thesis advisor will have to spend time to understand the project in order to help the student define the scope of the thesis and identify its scientific contributions. In many cases, the advisor may have to suggest work in addition to that done in the project to generate enough scientific contribution from the thesis work. Depending on the labor involved, the advisor may need reimbursable research funding support to allow him/her to work on the project.

STEPS FOR COMPLETING THE THESIS PROPOSALS
(i)   Submit drafts of the thesis proposal to the advisor(s) and second reader (if applicable) for review.
(ii) Ask the advisor(s), second reader (if applicable), and the SE Director to sign the final thesis proposal.
(iii) Submit the signed proposal to Curricular Officer.

THE THESIS PROCESS
An on-line thesis handbook is available at:
http://vislab-www.nps.navy.mil/~code36/THESISGUIDE.html

THESIS PROPOSAL
The thesis proposal is the key document in preparing for the thesis process. It performs several important functions in the process of communicating thesis activities. The proposal focuses the research effort for the student. It requires the student to develop a specific research question and subsidiary research questions, and to identify the methodologies to be employed in the research and the particular scope and limitations of the thesis work; it forces the student to give serious thought to the items that might become major problems later on. For a proposal example, refer to:

THESIS FORMAT APPROVAL
When determining format in terms of pagination, titles, headers, etc., follow the guidelines in the NPS Thesis Preparation Manual. The most current edition of this manual is available from the Thesis Processor.

> Ms. Elaine Christian, Code 91EC
> Research Office, Naval Postgraduate School
> Bldg. 234 Halligan Hall, Room 236
> Monterey, CA 93943-5138
> DSN: 878-2762, Comm: (831) 656-2762

The Thesis Processor will become very important to the student as the student prepares the final draft of the thesis. She will provide the student formatting information and other information needed to get the thesis published.

The student should send the Thesis Processor a copy of their thesis for format check as soon as a complete draft is completed. This can be done while waiting for comments from advisors and second readers.

FINAL THESIS SUBMISSION
(i)   The student notifies the curricular office by the first Friday of the quarter that he/she plans to graduate.
(ii)   The thesis is signed by the advisor(s), second reader, and the SE Chairman.
(iii)   Submit thesis to the Thesis Processor.

MASTER OF SCIENCE IN SOFTWARE ENGINEERING, FULL-TIME OPTION (369)

ENTRY DATE

The MSSE offers a six-quarter full-time curriculum with entry date in October, and an optional refresher quarter that starts in July. For more information, visit our website at http://seac.nps.navy.mil or email your inquiries to seac@nps.navy.mil, or contact the Curricular Officer, CDR Chris Lapacik at clapacik@nps.navy.mil

12-MONTH CURRICULUM FOR CIVILIAN STUDENTS
FALL INPUT

QUARTER 1 FALL	SW3460 (3-1) SOFTWARE METHODOLOGY	CS3502 (4-0) COMPUTER COMMS & NETWORKS/ SW4555 (3-1) ENGINEERING OF NETWORK CENTRIC SYSTEMS	**SW4570 (3-0) SOFTWARE REUSE/ SW4592 (3-1) SOFTWARE RISK ASSESSMENT**	**SW4582 (3-1) SOFTWARE SAFETY**
QUARTER 2 WINTER	SW4500 (3-1) SOFTWARE ENGINEERING	**SW4580 (3-0) DESIGN OF EMBEDDED REAL-TIME SYSTEMS**	**SW4591 (3-1) REQUIREMENTS ENGINEERING**	SW0810 THESIS RESEARCH
QUARTER 3 SPRING	SW4520 (3-0) ADVANCED SOFTWARE ENGINEERING	SW4590 (3-1) SOFTWARE ARCHITECTURE	IS4300 (3-2) SOFTWARE ENGINEERING & MANAGEMENT	SW0810 THESIS RESEARCH
QUARTER 4 SUMMER	SW4540 (3-0) SOFTWARE TESTING	**SW4510 (3-0) COMPUTER-AIDED PROTOTYPING/ SW4530 (3-1) SOFTWARE RESEARCH & DEVELOPMENT IN DOD/ SW4581 (3-1) SOFTWARE RELIABILITY & QUALITY METRICS**	SW0810 THESIS RESEARCH	SW0810 THESIS RESEARCH

IN BOLD PRINT: This track is notional. Please see the Software Engineering Academic Associate regarding possible substitutions for track-specific classes to accommodate focus areas pertinent to our thesis research.

18-MONTH CURRICULUM FOR MILITARY STUDENTS
FALL INPUT

QUARTER 1 FALL	SW3460 (3-1) SOFTWARE METHODOLOGY	CS3502 (4-0) COMPUTER COMMS & NETWORKS/ SW4555 (3-1) ENGINEERING OF NETWORK CENTRIC SYSTEMS	**SW4582 (3-1) SOFTWARE SAFETY**	NW3230 (4-0) STRATEGY & POLICY
QUARTER 2 WINTER	SW4500 (3-1) SOFTWARE ENGINEERING	**SW4580 (3-0) DESIGN OF EMBEDDED REAL-TIME SYSTEMS**	**SW4591 (3-1) REQUIREMENTS ENGINEERING**	NW3210 NSDM: DIRECTED STUDY PART I
QUARTER 3 SPRING	SW4520 (3-0) ADVANCED SOFTWARE ENGINEERING	IS4300 (3-2) SOFTWARE ENGINEERING & MANAGEMENT	**SW4590 (3-1) SOFTWARE ARCHITECTURE**	NW3211 NSDM: DIRECTED STUDY PART II
QUARTER 4 SUMMER	SW4540 (3-0) SOFTWARE TESTING	**MN3309 (4-1) ACQUISITION OF EMBEDDED WEPON SYSTEM SOFTWARE/ SW4581 (3-1) SOFTWARE RELIABILITY & QUALITY METRICS**	**SW4510 (3-0) COMPUTER-AIDED PROTOTYPING/ SW4530 (3-1) SOFTWARE RESEARCH & DEVELOPMENT IN DOD**	NW3220 JMO: DIRECTED STUDY PART I
QUARTER 5 FALL	SW0810 (0-8) THESIS RESEARCH	SW0810 (0-8) THESIS RESEARCH	**SW4570 (3-0) SOFTWARE REUSE/ SW4592 (3-1) SOFTWARE RISK ASSESSMENT**	NW3221 JMO: DIRECTED STUDY PART II
QUARTER 6 WINTER	SW0810 (0-8) THESIS RESEARCH	SW0810 (0-8) THESIS RESEARCH	IS3171 (4-1) ECONOMIC EVALUATION OF INFORMATION SYSTEMS II/ EO4011 (3-1) SYSTEMS ENGINEERING FOR ACQUISITION MANAGERS	NW3223 JMO: DIRECTED STUDY PART I

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18-MONTH CURRICULUM FOR MILITARY STUDENTS
SPRING INPUT

QUARTER 1 SPRING	SW3460 (3-1) SOFTWARE METHODOLOGY	CS3502 (4-0) COMPUTER COMMUNICATIONS & NETWORKS/ SW4555 (3-1) ENGINEERING OF NETWORK CENTRIC SYSTEMS	IS4300 (3-2) SOFTWARE ENGINEERING & MANAGEMENT	NW3230 (4-0) STRATEGY & POLICY
QUARTER 2 SUMMER	SW4500 (3-1) SOFTWARE ENGINEERING	SW4540 (3-0) SOFTWARE TESTING	**MN3309 (4-1) ACQUISITION OF EMBEDDED WEAPON SYSTEMS SOFTWARE/ SW4581 (3-1) SOFTWARE RELIABILITY & QUALITY METRICS**	NW3210 NSDM: DIRECTED STUDY PART I
QUARTER 3 FALL	**SW4570 (3-0) SOFTWARE REUSE**	**SW4582 (3-1) SOFTWARE SAFETY**	**SW4592 (3-1) SOFTWARE RISK ASSESSMENT**	NW3211 NSDM: DIRECTED STUDY PART II
QUARTER 4 WINTER	**SW4580 (3-0) DESIGN OF EMBEDDED REAL-TIME SYSTEMS**	**SW4591 (3-1) REQUIREMENTS ENGINEERING**	IS3171 (4-1) ECONOMIC EVALUATION OF INFORMATION SYSTEMS II/ EO4011 (3-2) SYSTEMS ENGINEERING FOR ACQUISITION MANAGERS	NW3220 JMO: DIRECTED STUDY PART I
QUARTER 5 SPRING	SW0810 (0-8) THESIS RESEARCH	SW0810 (0-8) THESIS RESEARCH	SW4520 (3-0) ADVANCED SOFTWARE ENGINEERING	NW3221 JMO: DIRECTED STUDY PART II
QUARTER 6 SUMMER	SW0810 (0-8) THESIS RESEARCH	SW0810 (0-8) THESIS RESEARCH	**SW4510 (3-0) COMPUTER-AIDED PROTOTYPING/ SW4530 (3-1) SOFTWARE R & D IN DOD**	NW3223 JMO: DIRECTED STUDY PART I

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